Series 70
Portable Computers

HEWLETT PACKARD

Hewlett-Packard Series 70 Portable Computers

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The HP-75 Portable Computer— You Can Take It Anywhere

The HP-75 is the portable computer for professionals on the move. As powerful as a personal computer, as small as a book, the HP-75 gives you the answers you need wherever and whenever you need them.

Enjoy Fast and Easy Solutions.

Prepare a 30-day income projection on the 7 a.m. to Chicago? Type a letter-perfect trip report on the 6:05 home? That's right. With an HP-75 and our ready-to-go software, you can perform spreadsheet analysis and create text on a plane or in a hotel room, at home, or in the office. To evaluate alternative courses of action, to ask "what if?" questions, and to get your answers almost instantaneously, simply plug in an HP-75 VisiCalc* module. To write memos, letters, reports, and other short documents quickly and easily, choose Text Formatter software. You can generate hard-copy output of your formatted text or program an HP graphics plotter to create high-quality color slides.

To get up-to-date information for your applications, you can use our acoustic coupler. Working with Data Communications software, the coupler lets the HP-75 communicate with other computers over telephone lines. Dial up stock market data and educational and message services such as THE SOURCE℠, the Dow Jones News/Retrieval Service*, and CompuServe. Tap your office or lab computer from the field. If electronic mail figures in your future, our coupler or an HP-IL/RS-232C interface with any standard modem, may be the right solution.

If you frequently work away from your desk, you'll appreciate the HP-75's file structure. It lets you store multiple VisiCalc worksheets and other files simultaneously. You can load program, data, and appointment files at the office, then call them up once you're out in the field.

You'll also like the way the HP-75's typewriter-like keyboard lets you touchtype to enter data fast, even with it resting on your lap. And the way you can redefine almost every key to become another character, expression, command, or to execute a program.

Make Every Minute Count.

You can rely on the HP-75's appointment and time modes to keep you on schedule. When each of your appointments comes due, the computer turns itself on, emits one of nine alarms, and displays the reminder message you entered. You don't have to worry about turning the computer off. The HP-75 automatically puts itself into deep sleep when the job's done. And you don't have to worry about losing your programs or data. Continuous Memory saves your information even when the HP-75 is turned off.

VisiCalc® is a registered trademark of VisiCorp.

THE SOURCE℠ is a service mark of Source Telecomputing Corp., a subsidiary of Reader's Digest Association.

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Set Yourself Free.

With the HP-75, you can leave the office and still have immediate access to personal computer power. There are 16K bytes of user memory (RAM) built in, and you can expand it to 24K bytes with an optional 8K-byte plug-in module. With 24K bytes of RAM and a 48K byte built-in ROM operating system, you have plenty of memory for problem solving. You also have the option of using as many as three plug-in ROM modules with up to 32K bytes each. The HP-75 uses convenient battery power. Three rechargeable nickel-cadmium batteries run for two to three weeks of normal use or 20 to 30 hours of continuous use.

You can even carry around your own personal computing system in a briefcase. Or, you can create a desktop system for the office or lab. You get this flexibility because the HP-75's built-in HP-IL (Hewlett-Packard Interface Loop) lets you access a variety of portable, battery-powered devices for mass storage, printing, plotting, and measurement.

In the Laboratory.

Whether you're crunching numbers, creating sophisticated programs, or performing real-time datalogging, the HP-75 backs you up with the power, accuracy, and versatility you need.

Solve It With Software.

You've got two software media to choose from. You can take advantage of ready-recorded software solutions with plug-in modules, such as HP-75 Application Pacs (VisiCalc, Text Formatter, Math, Surveying, and Data Communications). Or you can load ready-written solutions from magnetic cards in disciplines such as math, engineering, and finance from HP-75 Solutions Books.

Take Control.

With built-in HP-IL, the HP-75 can talk to and work with devices such as battery-powered mass storage drives and printers. It can control instruments such as digital multimeters and data acquisition and control devices. And using a variety of interface converters it can communicate with desktops such as HP Series 80, 100, and 200 computers and large mainframes such as the HP 1000 and the HP 3000.

Hewlett-Packard
HP-75 Key Features

Battery Pack
with rechargeable nickel-cadmium batteries. Recharger included. 3-4 weeks of normal usage (min. 30 hrs in RUN mode).

HP-IL Interface
for battery-operated cassette drive, battery-operated printer, instrumentation control, video monitor, color graphics plotter, full-width printers, larger systems.

48K-Byte Operating System
with 167 keywords (104 BASIC, 41 numeric, time, alarms, appointments, etc.).

8K-Byte Memory Module Port
for additional user storage capacity.

Compact and Lightweight
5" x 10" x 1.25" (12.7 cm x 25.4 cm x 3.2 cm) weighing 26 oz (740 g).

32-Character LCD
with scrolling to 96 characters.

8-Bit CMOS CPU

16K-Byte User RAM
expandable to 24K bytes.

Touch-type QWERTY Keyboard

Built-in Beeper
for programmable acoustic alarms.

Redefinable Keyboard
redefinable at will or under program control, using Keyboard Overlays.

Continuous Memory

Three Plug-in Ports
for prewritten software modules, up to 32K bytes each. Modules provide permanent program storage and automatic execution.

Hand-pull Card Reader
for off-line storage on magnetic cards, 1.3K bytes per card, random entry of multi-track files, write/protect.

Hewlett-Packard
HP-75 Hardware Overview

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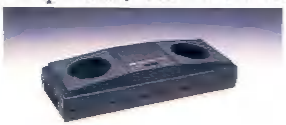

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HP 82164A RS-232C Interface
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Hewlett-Packard
HP-75 Software Overview

Clinch That Sale.

When making that important presentation to your client, you want the tools that will help you make the sale quickly and efficiently. You also need access to information critical to the buying decision. This professional depends on the HP-75 when selling life insurance. The relevant information, contained on pocketable cassettes, can be accessed speedily through the cassette drive. His HP-75 quickly ploughs through complex formulas to give his clients the correct answer. And with the HP-75's VisiCalc software the rep can calculate the options that are best for them. He also brought along an HP-IL video interface so that the information could be displayed, right on their own TV screen. The rep can even provide them with a printout of all the options. So, no matter where your job takes you, let the HP-75 help make you an instant success.

For General Business:

For Entertainment:

For Engineering:

For Science:

Hewlett-Packard
HP-75 Hardware

HP-75 Portable Computer

The HP-75 is a battery-powered portable computer that matches the information handling capability and accuracy of larger desktop computers. It weighs only 26 ounces and measures 10 by 5 by 1.25 inches. This fully-integrated computer may be used alone or configured as part of an HP-IL (Hewlett-Packard Interface Loop) briefcase system or an HP-IL desktop system.

- The HP-75 contains a CMOS version of a Series 80 Personal Computer CPU for speed and accuracy.
- The built-in 48K-byte ROM BASIC Operating System has more than 100 system and BASIC commands and 41 numeric functions to choose from.
- With the HP-75's multiple file structure, any number of files, up to available memory space, may be in memory at the same time. You can keep text and BASIC files.
- A built-in appointment function provides personal scheduling, audio alarm, and message options. A clock/calendar function lets you create or use clock/calendar-dependent programs. Programs or commands may be executed unattended.
- The HP-75 offers a maximum of 24K bytes of RAM, with 16K bytes built in and an optional 8K-byte memory module. Three ports hold up to 96K bytes of applications ROM modules.
- Continuous Memory saves data and programs even when the HP-75 is turned off.

Features	Benefits
• 8-Bit CMOS Series 80 Personal Computer CPU.	Fast and efficient data processing.
• Built-in 48K-Byte ROM BASIC language operating system.	Friendly programming; fast math calculations; efficient time management; more than 90 percent of RAM free for your applications.
• 16K-Byte RAM plus optional 8K-Byte RAM plug-in.	Plenty of memory.
• 3 software module plug-in ports hold up to 32K bytes each.	Customized problem-solving. Up to 96K of software ROM.
• Touch-type QWERTY keyboard.	Easy, fast, and accurate data entry.
• Battery power.	Use it anywhere.
• Built-in HP-IL interface.	Printing and mass storage anywhere; remote communication via telephone lines; expanded display capability.
• Built-in hand-pulled card reader.	Convenient and inexpensive off-line storage of data and programs.
• Multiple file structure.	Instant access to most commonly used programs.

- The HP-75 has a touch-type keyboard that lets you enter data fast. And you can redefine more than 190 keys or key combinations.
- Simple keystrokes call up a "hidden" numeric keypad for quick input of numeric data.
- Built-in HP-IL lets your HP-75 communicate with HP computers, peripherals, and instruments in a variety of ways to suit specific needs.
- A built-in card reader lets you store data and information inexpensively on small magnetic cards, up to 1.3K bytes per card.
- The liquid-crystal display acts as a 32-character window on a 96-character line. You view the entire line by scrolling. The 256-character set includes both upper- and lower-case ASCII characters with true descenders, as well as several special characters.
- Three rechargeable nickel-cadmium batteries permit two to three weeks of normal use between charges or 20 to 30 hours of continuous operation.

Physical Specifications

DIMENSIONS . . .12.7 cm (5 in) x 25.4 cm (10 in) x 3.2 cm (1.25 in)

WEIGHT . . . . . .737.1 g (26 oz)

POWER REQUIREMENTS

Batteries . . . . . .NiCad Battery Pack (HP 82001B)

Battery Current (worst case) . . .25 mA (RUN mode) providing 20 to 30 hours of RUN mode operation (approximately 2 to 3 weeks between recharges)
14 mA (STANDBY mode)
20 µA (SLEEP mode)

OPERATING REQUIREMENTS

Operating temperature . . .0° to 45°C (32° to 113°F)

Recharging temperature . . .10° to 40°C (50° to 104° F)

Storage temperature . . .−40° to 55°C (−40° to 131° F)

Humidity . . . . . .0 to 95% relative humidity

DISPLAY

Liquid-crystal display
Character font . . .5 x 9 dot matrix
Capacity . . . . . .96 characters per line
Window size . . . .32 characters
Character set . . . .256 characters

CHARACTER RANGE

A-Z, a-z, 0-9, plus 27 special characters, with or without underlining.

DYNAMIC RANGE

Real precision . . . −9.99999999999E499 to −1E-499, 0, 1E-499 to 9.99999999999E499

Short precision . . . −9.9999E99 to −1E-99, 0, 1E-99 to 9.9999E99

Integer precision . . . −99999 to 99999

Variable types . . . .Numeric, String, Numeric array

CLOCKS & TIMERS

Perpetual clock calendar, 12-hour or 24-hour format. Time function returns time to the nearest millisecond.

Accuracy range . . .15 seconds/month to 3 minutes/month

Adjustable clock speed . . . . ± 10%

BEEPER

The beeper is programmable with parameters for duration and tone. The frequency range is approximately 1 to 1600 Hz.

REDEFINABLE KEYS 194

MULTIPLE FILE STRUCTURE

The number of files in HP-75C memory is limited only by the amount of available RAM.

LANGUAGE

Extended HP BASIC (167 instructions)

ROM/RAM

Built-in operating system ROM . . .48KB
Three 32KB plug-in ROMs for an additional 96KB ROM

Built-in user RAM 16KB

Enhancement Memory Module (HP 82700A) . . .8KB

Maximum system RAM (with Memory Module) 24KB

INTERFACE

Built-in HP-IL (Hewlett-Packard Interface Loop)

OFF-LINE MASS STORAGE

Built-in Card Reader, hand pulled

CONTINUOUS MEMORY

Retains data and programs even when the computer is turned off.

THE HP-75C PORTABLE COMPUTER COMES COMPLETE WITH:

HP-75C Owner's Manual
Reference Manual
HP-75C Owner's Pac
Keyboard Overlay Kit
Accessory Brochure
Service Card
Field Case
Rechargeable Battery Pack
AC Adapter/Recharger
HP-IL Cables
Card Holder

HP-75C Functions List

NUMERIC FUNCTIONS

ABS—Absolute value.
ACOS—Arccosine.
ANGLE—Arctangent of y/x.
ASIN—Arcsine.
ATN—Arctangent.
CEIL—Smallest integer ≥x.
COS—Cosine.
COT—Cotangent.
CSC—Cosecant.
DATE—Date in yyddd format.
DEG—Radian-to-degree conversion.
EPS—Smallest machine number.
ERRL—Line number of most recent error or warning.
ERRN—Identification number of most recent error or warning.
EXP—e(x).
FLOOR—Largest integer ≤ x.
FP—Fractional part.
INF—Largest machine number.
INT—Largest integer ≤ x.
IP—Integer part.
LEN—String length.
LOG—Natural logarithm.
LOG10—Base 10 log.
MAX—If x>y then x, else y.
MEM—Available memory in bytes.
MIN—If x<y then x, else y.
MOD—Modulo.
NUM—Decimal code of the first character in a string.
PI—3.14159265359.
POS—Position of a character in a string.
RAD—Degree-to-radian conversion.
RES—Numeric result.
RMD—Remainder.
RND—Random number.
SEC—Secant.
SGN—Sign of a number (+ or −).
SIN—Sine.
SQR—Positive square root.
TAN—Tangent.
TIME—Number of seconds since midnight.
VAL—Numeric value of a string.

STRING FUNCTIONS

CATS—Catalog entry of a file.
CHR$—Character with decimal code MOD (X,256).
DATE$—Date in yy/mm/dd format.
KEY$—Display character of currently depressed key.
STR$—Converts a numeric to a string.
TIME$—Time in hh:mm:ss format, using 24-hour notation.
UPRC$—Converts input string to uppercase letters.
VER$—Six-character string indicating the operating system version.
TAB—Tabulator.

TIME MODE COMMANDS

ADJST—Displays ADJST template.
EXACT—Sets timing mark.
RESET—Clears EXACT marks and current speed adjustment factor.
SET—Displays set-time template.
STATS—Displays STATS template.

BASIC STATEMENTS

ASSIGN #—Assigns file number to a file name.
BEEP—Causes a tone to sound at specified frequency and duration.
CALL—Calls a program from within another program.
DATA—Numeric or string constants for use by READ.
DEF FN—Defines user-defined function or multi-line function.
DIM—Dimensions array.
DISP—Displays information.

DISP USING—Displays information according to IMAGE statement.
END—Terminates program.
END DEF—Defines end of multiline user-defined function.
FOR...TO...STEP—Defines beginning of FOR-NEXT loop.
GOSUB—Branches to a series of statements.
GOTO—Unconditionally branches to a line number.
IF...THEN...ELSE—Tests condition and branches.
IMAGE—Specifies the output format for DISP USING and PRINT USING.
INPUT—Allows input of data from the keyboard.
INTEGER—Dimensions and reserves memory for integer precision numeric variables.
LET—Assigns value to one or more variables.
LET FN—Assigns a value to a function.
NEXT—Defines end of FOR-NEXT loop.
OFF ERROR—Disables user-defined error trapping.
OFF TIMER #—Disables a program timer.
ON ERROR—Initiates user-defined error trapping.
ON TIMER #—Sets a program timer.
ON...GOSUB—Computed GOSUB.
ON...GOTO—Computed GOTO.
OPTION BASE—Defines lower bound of all arrays in a program.
POP—Bypasses a pending subroutine return.
PRINT—Prints information.
PRINT #—Stores data items in a data file.
PRINT USING—Prints information according to IMAGE statement.
PUT—Simulates pressing of corresponding key or keystroke combination.
RANDOMIZE—Computes new random number seed.
READ—Assigns values from DATA statements to variables.
READ #—Retrieves data items from a data file.
REAL—Dimensions and reserves memory for real variables.
REM—Program remarks.
RESTORE—Resets data pointer to a DATA statement.
RESTORE #—Resets data pointer to line of data file.
RETURN—Causes program to branch from subroutine to statement following the branching statement that referenced the subroutine.
SHORT—Dimensions and reserves memory for short precision numeric variables.
STOP—Halts program.
WAIT—Interrupts program execution for a specified period of time.

SYSTEM COMMANDS

ALARM OFF—Ignores due appointments.
ALARM ON—Restores normal handling of due appointments.
ASSIGN TO—Assigns device codes to peripherals.
AUTO—Begins automatic line numbering.
BEEP OFF—Disables beeper.
BEEP ON—Restores beeper operation.
BYE—Turns computer off.
CAT—Displays catalog entry of the specified file.
CAT ALL—Accesses complete system catalog.
CAT CARD—Displays catalog information recorded on card track.
CLEAR LOOP—Resets all HP-IL devices to their initial states.
CLEAR VARS—Clears values of variables.
CONT—Continues program execution.
COPY—Copies specified file in memory to specified destination.
DEFAULT OFF—Cancels use of default values for improper mathematical expressions.
DEFAULT ON—Restores use of default values for improper mathematical expressions.
DEF KEY—Redefines key or keystroke combinations.
DELAY—Specifies length of time computer will wait between display lines.
DELETE—Deletes specified line(s).
DISPLAY IS—Designates specified device as a system display device.
EDIT—Moves file pointer to specified file.
ENDLINE—Redefines the end-of-line.
FETCH—Fetches specified line.
FETCH KEY—Recalls current definition of specified key or keystroke combination.
INITIALIZE—Prepares medium in mass storage device to store information.
LIST—Lists one or more lines of specified file on the display.
LIST IO—Lists device codes of assigned HP-IL devices on the display.
LOCK—Locks computer against use without specified password.
MARGIN—Sets margins.
MERGE—Merges line(s) from specified file into current file.
NAME—Renames current file and creates another workfile.
OFF IO—Suspends HP-IL communication.
OPTION ANGLE DEGREES—Sets trigonometric mode to degrees.
OPTION ANGLE RADIANS—Sets trigonometric mode to radians.
PACK—Packs medium on specified mass storage device.
PLIST—Lists line(s) of specified file on current system printer.
PRINTER IS—Designates specified device as a printer device.
PROTECT—Protects magnetic card from being overwritten.
PURGE—Erases file from memory.
PWIDTH—Sets line length for PRINT and PLIST instructions.
RENAME...TO—Changes name of specified file in memory.
RENUMBER—Renumbers specified portion of file.
RESTORE IO—Restores HP-IL communication.
RUN—Begins program execution.
STANDBY OFF—Turns computer off after five minutes of inactivity.
STANDBY ON—Sets the computer to stay on indefinitely.
TRACE FLOW—Sets the computer to display source and destination line numbers of branch in program execution.
TRACE VARS—Sets the computer to display line number and variable name.
TRANSFORM—Transforms one type of file in memory into another.
UNPROTECT—Removes write-protection from magnetic card.
WIDTH—Sets line length for DISP and LIST instructions.

ARITHMETIC OPERATORS

+, –, *, /, ^, DIV or

LOGICAL OPERATORS

AND, OR, EXOR, NOT

RELATIONAL OPERATORS

=, <, > or #, [illegible]

82700A 8K-BYTE MEMORY MODULE

This module gives you an additional 8K bytes of programmable memory. It easily plugs into the HP-75 to give you a maximum of 24K bytes of RAM.

HP-75 ACCESSORIES

Owner's Manual 00075-90001
Reference Manual 00075-90004
Rechargeable Battery Pack 82001B
Reserve Power Pack 82004A*
Recharger for Reserve Power Pack (110 volt) 82002A
AC Adapter/Recharger 82059B
Security Cradle 82701A
Field Case 82703A
30 Blank Magnetic Card Pac 82707A
100 Blank Magnetic Card Pac 82708A
Overlay Kit (quantity 5) 82710A
Notebook Card Holder (quantity 5) 82715A
Blank Overlay Kit (quantity 50) 82717A

*Requires an HP 82002A Recharger (110 volt).

HP 82161A
Digital Cassette Drive

The HP 82161A battery-powered digital cassette drive provides convenient data-handling capability for Series 70 and Series 40 computers. With 128K bytes of on-line mass storage packed into each mini-cassette, you have the power for applications which previously required a larger computer. And you can access files quickly, thanks to variable record length, file-by-name organization, and a tape directory.

All tape movement is under microprocessor control, so you don't waste time. Average rewind time is under 30 seconds, read/write operations are executed at nine inches per second, and search speed is 30 inches per second. You get buffer space for temporary storage of directory information, making access even faster.

The HP 82161A can locate your files under program control. It features battery-saving STANDBY mode that lets a Series 40 controller turn the drive on or off from remote locations. Programming is required for Series 70 to perform this function. See the HP-75 I/O Utilities Solutions Book, 00075-13013.

Features	Benefits
• Battery power	Take it anywhere
• 128K bytes per cassette	More than five times the RAM capacity of the HP-75, more than 58 times the RAM capacity of the HP-41CV
• Variable record length, file-by-name organization, tape directory	Access data quickly and easily; save file space.
• Internal buffer space	Minimizes tape motion and access time
• STANDBY mode	HP-IL controller can turn drive on or off from a remote location, conserves battery power.

Physical Specifications

DIMENSIONS . . . 17.8 cm (7.0 in) x 13.2 cm (5.2 in) x 6.1 cm (2.4 in)

WEIGHT . . . . . .798 g (1.8 lbs)

POWER REQUIREMENTS

Batteries	four-cell 4.4 to 6 volt, quick-charge, nickel-cadmium battery pack
Pack recharging time	14 to 16 hours (Drive turned on or off)
Usage	ON—2 watts maximum (motor off) ON—3.5 watts maximum (motor on) STANDBY (on)—2.3 watts maximum (motor off) STANDBY (on)—3.8 watts maximum (motor running) STANDBY (off)—0 watts maximum (motor off)

DATA FORMAT

Number of tracks	2
Density	335 bits per centimeter (850 bits/inch)
Format	256 bytes per record (8 bits per byte)
Formatted capacity	512 records (131,072 bytes)
Encoding method	bi-phase/level-phase encoding

DRIVE MECHANISM

Type	two-motor, hub drive
Read/Write speed	23 centimeters (9 in) per sec
Search/Rewind speed	76 centimeters (30 in) per sec

INTERFACING

Type	HP-IL (Hewlett-Packard Interface Loop)
Default address on power up	undefined
Default address after auto address unconfigured	2

OPERATING REQUIREMENTS

Operating temperature	10° to 40°C (50° to 104°F)
Charging temperature	15° to 40° C (59° to 104° F)
Storage temperature without tape	– 40° to 75°C (– 40° to 167° F)

DIGITAL CASSETTE

Type	Hewlett-Packard Mini-Data Cassette (HP 82176A)
Tape length	24 m (80 ft)
Temperature limits	10° to 45°C (50° to 113°F)
Humidity (tape storage) limits	20% to 80% relative humidity

SPECIAL MODES

Standby

HP 82162A
Thermal Printer/Plotter

The HP 82162A provides fast printouts with 24-character lines. It's battery-powered, so you can produce hard copy in the field.

This HP-IL compatible printer/plotter automatically centers and justifies text to the left or right. It has numeric upper- and lowercase alpha, double-wide characters, and intensity control for optimum contrast and readability. Additionally, it supports STANDBY mode that lets a Series 40 controller manage its power consumption. Programming is required for Series 70 to perform this function. See the HP-75 I/O Utilities Solutions Book, 00075-13013.

Features	Benefits
• Battery power	Take it anywhere
• Automatic centering and left or right justification	Provides formatting control; saves time
• 24-character print line size	Makes smaller print possible
• Both single- and double-wide characters	Allows highlighting of output
• 128-character set	Allows more precise communication
• STANDBY mode	HP-IL controller can turn printer on or off from remote location; conserves battery power

Physical Specifications

DIMENSIONS 17.8 cm (7.0 in) x 13.2 cm (5.2 in) x 6.1 cm (2.4 in)

WEIGHT 808 g (1.8 lbs) (includes paper and battery)

CABLE LENGTH 80 cm (31 in)

POWER REQUIREMENTS

Battery	four-cell, 4.4 to 6 volt, quick charge, nickel cadmium battery pack
Battery current (worst case)	250 mA (idle), 5 A (printing)
Recharging time	14 to 16 hours (printer/plotter on or off)
Operating time	3 to 6 hours

CHARACTER SETS
96 standard ASCII
127 modified-expanded ASCII

SPECIAL MODES
Standby, Parse, Bar code, Column, Double wide, Single wide, Graphics, 8-bit escape

PRINT FORMAT
24 standard characters, 12 double-wide characters, 168 dot-columns per line
Upper- and lowercase letters
Special-character generation
Plotting capabilities
101 character buffer

PRINTING SPEED 24 characters/sec

OPERATING REQUIREMENTS

Operating temperature	0° to 45° C (32° to 113° F)
Charging temperature	15° to 40° C (59° to 104° F)
Storage temperature	−40° to 55°C (−40° to 131° F)
Humidity	10% to 90% (non condensing) at 40° C

THERMAL PAPER

Width	5.7 cm (2.2 in)
Roll length	25 m (80 ft)
Colors	blue, black
# rolls/box	6

INTERFACE

Type	HP-IL (Hewlett-Packard Interface Loop)
Startup conditions	normal (inactive or active-listener, selected at power-on)
Default address	undefined (normal start-up) or 1 (active-listener startup)

HP 82905B Impact Printer

Operating bidirectionally at 80 characters per second, this 80-column (full-page) printer produces forms quickly and legibly.

It has a standard 128-character set with upper- and lowercase letters and true descenders. And you can choose from five print modes.

The text mode of this dot-matrix printer has a logic-seeking feature that finds the shortest route. Programmable line spacings, in increments of 1/48 inch, let you print superscripts and subscripts. A Roman character set allows multilingual printing.

The HP 82905B prints single or multipart forms (up to three parts, each with a maximum thickness of 0.3 mm). Its adjustable tractor feed can be used with all types of computer forms with widths between 4 in (10.2 cm) and 10 in (25.5 cm). Programmable page length lets you define page size and skip perforations.

Features	Benefits
• Up to 132 characters per line	Full-page printouts available
• Operates bidirectionally at 80 characters per second	Produces forms quickly
• Programmable page length for single or multipart forms.	Greater control over output
• Adjustable tractor feed.	Use with all types of computer forms
• Roman character set	Allows printing in several languages

Physical Specifications

DIMENSIONS 10.7 cm (4.2 in) x 37.4 cm (14.7 in) x 30.5 cm (12.0 in)

WEIGHT 5.5 kg (12 lbs)

POWER REQUIREMENTS

Power source: HP-IB: Opt. 002, 003, 004 (100Vac); HP-IL: Opt. 248, 348, 448 (120Vac); RS-232: Opt. 240, 340, 440 (220Vac)

Frequency: 50/60 Hz

Power consumption: 100VA maximum

OPERATING REQUIREMENTS

Operating temperature: 5° to 35°C (41° to 95°F)

Humidity: 10% to 90%, noncondensing

PRINT FORMAT

Technique: dot-matrix impact

Speed: 80 characters/sec bidirectional; logic-seeking in text mode

Text mode character cell structure: 9 x 8 dot-matrix

Graphics mode character structure: 72 x 60 or 72 x 120 dots/in

Characters per line: 40, 66, 80, 132

Line feed rate: 5 lines/sec

Print Pitch (CPI)		Line Length (characters)
10.0	normal	80
5.0	normal expanded	40
16.50	compressed	132
8.25	compressed expanded	66
10.00	normal emphasized	80

Character Set: 96 USASCII

Roman Extension: 4e

FORMS HANDLING

Forms tractors

Programmable page length

Automatic perforation skip

Variable vertical line spacing: 1/48 in standard; programmable to various line densities.

FORMS SPECIFICATIONS

Paper width range: 10.2 cm (4 in) to 25.4 cm (10 in)

Paper thickness: 0.3 mm (0.01 in) maximum

Multipart forms: original plus 2 copies

PRINT BUFFER

One line, or up to 132 characters

HP 2671A/G Alphanumeric/Graphics Thermal Printers

The HP 2671A Alphanumeric Printer is both quiet and fast — 120 characters per second with a smart, bidirectional print path. The 9 x 15 dot matrix provides excellent character definition. Highlight with an underlining feature, print standard English or use Roman Extension for multilingual text.

In addition to all this, the HP 2671G offers high-resolution graphics capabilities for charts, tables, illustrations, and graphs.

Features	Benefits
• High throughput	Rapid printing
• Quiet	Useable in quiet areas
• 9 x 15 dot matrix	Excellent character definition
• Choice of paper available	Use fan-fold forms or roll paper
• Choice of print modes	Multilingual output

Physical Specifications

DIMENSIONS: 10.5 cm (4.1 in) x 42.8 cm (16.9 in) x 42.4 cm (16.7 in)

WEIGHT 6.9kg (16 lbs)

POWER REQUIREMENTS
Line voltage ~5%, -10%
HP-IB Built-in
HP-IL Opt 048
RS-232 Opt 040
100, 120, 200 and 240 Vac, switch selectable
Frequency 47.5-66 Hz
Power consumption 15 watts maximum non printing
50 watts maximum printing

OPERATING REQUIREMENTS
Operating temperature 5° to 35°C (41° to 95°F)
Humidity 10% to 90% noncondensing

PRINT FORMAT
Technique dot-matrix thermal
Speed 120 characters/sec bidirectional, logic seeking in text mode.

Character structure . . . . 9 x 15 dot matrix

Print Pitch	Line Length (Characters)
16.20	132
10.00	80

Character Sets . . 128 USASCII
Line drawing
Roman Extension (international characters, 8-bit mode)

FORMS HANDLING
Form feed button
Margin control

FORMS SPECIFICATIONS
Thermal paper width . . . 21.6 cm (8.5 in)
Paper options include fan folded, page perforated; roll, or roll, page perforated

OTHER PRINTING FEATURES
Underlining character enhancement

OTHER
2671G raster graphics: Type: Unidirectional raster graphics copy; 90 dots/in horizontal and vertical resolution; 720 dots across a raster row

HP 7470A Graphics Plotter

The HP 7470A Graphics Plotter uses a two-pen system to produce high-quality color charts and graphs that fit in your briefcase and go with you anywhere. It works with paper or overhead transparency film for your professional presentations.

More than 40 HP-GL (Hewlett-Packard Graphics Language) instructions are built in, letting you program the plotter to perform a variety of complex operations, such as selecting pen velocity and defining your own characters. Text can be written in any direction, with or without slant, and in many sizes. Built-in symbol plotting and seven dashed-line fonts help you clarify complex relationships.

Features	Benefits
• High-quality graphics	Achieve more precise results.
• [illegible] points in a one-inch line (.001 in or .025 mm)	Fine resolution of lines and curves.
• Lines plotted up to 15 inches (38 cm) per second	Generate plots in minutes.
• Two built-in pen stalls; snap in additional pens as needed	Print with two or more colors.
• Five internal character sets	Eliminates need for software-generated characters.

Physical Specifications

DIMENSIONS . . . 42.7 cm (5 in) x 43.2 cm (17 in) x 34.3 cm (13.5 in)

WEIGHT . . . . . 6.1 kg (13.5 lbs)

POWER REQUIREMENTS
−10%, −5%
RS-232: Opt. 001
HP-IB: Opt. 002
HP-IL: Opt. 003

OPERATING REQUIREMENTS
Operating temperature . . 0° to 55°C (32° to 131°F)
Storage temperature . . . . -40° to 75°C (-40° to 167°F)

PLOTTING AREA
Y-axis . . . . . 190 mm (7.5 in)
X-axis . . . . . 273 mm (10.7 in) metric setting; 258 mm (10.2 in) English setting

MEDIA SIZES
8½ x 11 in (ANSI A); 210 x 297 mm (ISO A4)

RESOLUTION
Smallest addressable step size . . . . . 0.025 mm (0.001 in)

REPEATABILITY
With a given pen . . . . 0.1 mm (0.004 in)
From pen to pen . . . . 0.2 mm (0.008 in)

PEN VELOCITY
Pen down . . . . . maximum—38.1 cm/sec (15 in/sec) programmable—1 to 38 cm/sec in 1 cm/sec increments
Pen up . . . . . 50.8 cm/sec (20 in/sec)

ACCELERATION
Approximately 2Gs

HP 82168A
Acoustic Coupler (Modem)

With the portable coupler, the HP-41 and HP-75 can talk to other computers over voice-quality telephone lines from remote locations. The 300-baud device meets the Bell 113 standard and can be used anywhere a conventional (G-type) telephone receiver is available.

The battery-powered device is compatible with HP-IL (Hewlett-Packard Interface Loop). It can be turned on or off by a controller, or it automatically turns itself off after 10 minutes of inactivity. Mode changes are under software control, making communication easier.

The HP-41 Extended I/O Module, an HP-41 and HP 82168A Acoustic Coupler are all that are necessary for Series 40 operation of this battery-powered modem.

Data Communications Pac software is the quickest and easiest way to operate the coupler with Series 70 computers. You also can use the combination of I/O Utilities Card (available in the HP-75 Utilities Solutions Book, 00075-13013) and Asynchronous Terminal Emulator Program. The terminal emulator program may be found in the HP 82168A Acoustic Coupler manual.

For additional data communications information, see the HP 82164A HP-IL/RS-232C Interface, page 17.

Features	Benefits
• Portable, carry in briefcase	Can be used from any conventional (G-type) phone receiver. Send or receive data while away from the office
• Operates at 300 baud	Compatible with most public and private data bases
• Automatic power off	Minimal power drain
• HP-IL command controlled	Fully automatic operation

Physical Specifications

DIMENSIONS 25.7 cm (10.1 in) x 9.7 cm (3.8 in) x 5.7 cm (2.2 in)

WEIGHT 650 g (22.9 oz)

POWER REQUIREMENTS
2.2 to 4.8 Vdc
Recharger
Input: 90 to 120 Vac, 50 to 60 Hz, 7 watts
Output: 5.8 Vdc, 3 watts maximum
Power consumption: 140 mW

OPERATING REQUIREMENTS
Operating temperature: 0° to 39°C (32° to 113°F)
Charging temperature: 19° to 40°C (59° to 104°F)
Storage temperature: -40° to 65°C (-40° to 149°F)

TELEPHONE INTERFACE
Data transmission rate: 300 baud
Input buffer capacity: 40 bytes
Output buffer capacity: 40 bytes
Compatibility: Bell-type 113 series coupler
Transmit frequencies (Hz): 1070, 1270 (originate mode)
Receive frequencies (Hz): 1070, 1270 (originate mode)
Frequency stability control: crystal (parallel)
Receiver sensitivity: – 45 dBm (nominal)
Transmit level: – 15 dBm (nominal)
Modulation: Frequency Shift Keyed (FSK)
Carrier detect delay: 1.5 sec (average)

CONTROL PROTOCOLS
ENQ/ACK
XON/XOFF
NONE

Hewlett-Packard Instruments

HP 3468A Digital Multimeter*

HP's first HP-IL (Hewlett-Packard Interface Loop) instrument is a low-cost, autoranging digital multimeter for Series 70 and Series 40 portable and bench applications. It electronically calibrates itself, measures ac and dc voltages and currents and makes four-wire and two-wire resistance measurements.

The device has 5½ to 3½ digits, five functions, and a 1-μV sensitivity.

Features	Benefits
• 5½-digit precision	Accurate measurements for high performance needs
• 1μV dc and ac resolution, 300 volts maximum	High sensitivity to detect small changes
• HP-IL interface	Low-cost automatic measurements
• 5½- to 3½-digits of resolution; auto zero ON or OFF; speeds of 32 to 2.7 rps	Selectable speed vs. accuracy for measurement flexibility
• Electronic calibration and self-test	Low-cost calibration, assures proper functioning
• Optional battery pack	Portability and isolation

HP 3421A Data Acquisition/ Control Unit*

The Data Acquisition/Control Unit provides low-cost automated measurement and control for your portable and bench test needs. Scan and measure up to 30 differential channels or 56 single-ended channels of dc and ac voltage, resistance, temperature, and frequency; or read and write digital information and actuate control signals. It stores up to 30 analog readings in an internal buffer for later use by the computer.

Features	Benefits
• Battery power	Take it anywhere
• Display shows channels closed, digital states, and self-test conditions	See what's happening at a glance
• Electronic calibration and self-test	High reliability and repeatable answers
• Built-in 300,000 count A/D with 1-μV sensitivity and good noise rejection	Measure transducers with confidence
• Front terminals are in parallel with the scanner's common bus	Measure dc volts, ac volts, ohms, frequency or thermocouples conveniently on the bench
• Switch from HP-IL to HP-IB or HP-IL/HP-IB interfaces	Choose between low battery power and high computer performance

*Not available at retail. Contact your nearest HP sales office for more information.

Hewlett-Packard Interfaces

HP 82169A HP-IB Interface

The HP 82169A expands Series 70 and Series 40 control and communication capabilities by linking low-cost HP-IL (Hewlett-Packard Interface Loop) systems with high-performance HP-IB (IEEE 488) computers and lab equipment. It puts at your disposal a variety of peripherals, instruments, and computers, including more than 120 HP-IB-compatible devices made by HP and many more offered by other manufacturers.

With the HP-IL/HP-IB interface, you can operate HP-IB versions of the HP 82905B printer and the HP 7470A and HP 9872B plotters, operate and control power supplies and instruments such as the HP 1980 oscilloscope; and talk directly with HP-IB computers such as HP Series 100, 200, 1000, and 3000.

HP 82164A RS-232C Interface

The HP 82164A is a fully asynchronous bit-serial interface that lets an HP-IL (Hewlett-Packard Interface Loop) controller, such as Series 70 or Series 40, talk to and work with computers, terminals, peripherals, and modems.

HP 82163 HP-IL 32-Column Video Interface

You can use this interface to display data and listings from HP-75 or HP-41/HP-IL systems on VHF TV and TV monitor screens.

The display memory, consisting of 992 bytes, holds 31 lines of up to 32 characters. Sixteen lines may be viewed on the display at one time, and remaining lines are viewed by scrolling them onto the screen.

Characters can be displayed in inverse video (dark characters on light background).

HP 82163A: U.S.
HP 82163B: European

HP 82165A GPIO Interface

With this general purpose byte (8-bit) interface, an HP-41 or HP-75/HP-IL system can talk to and work with printers, special instrumentation, and other equipment with parallel bus structures. It contains port buffering and a built-in power supply.

HP 82938A Series 80 Interface

With the HP 82938A, a Series 80 computer can act as a system controller or device in an HP-75 or HP-41/HP-IL (Hewlett-Packard Interface Loop) system. You can take advantage of Series 80 graphic capabilities to display information in easy-to-understand graphs and charts. Or, with Series 80 data communication products, you can pass information to larger computers.

HP 82166C HP-IL Interface Kit*

This prototyping kit contains four sets of components and all the documentation needed to design HP-IL (Hewlett-Packard Interface Loop) capabilities into microprocessor-based devices.

The kit includes:

- HP-IL Integrated Circuits. These general purpose ICs provide a convenient interface between most standard microprocessors and HP-IL.
- HP-IL Transformer Set. This component provides electrical isolation of devices on the loop, as well as voltage level conversion and impedance matching.
- HP-IL Panel Receptacle. It provides a foolproof mechanical method of connecting HP-IL devices.

These components may be purchased individually when design is completed.

* Not available at retail. Contact your nearest HP sales office for more information.

Hewlett-Packard
HP-75 Software

VisiCalc*
00075-15014

You can perform spreadsheet analysis anywhere with HP-75 VisiCalc Application Pac software. Simply plug the 32K-byte ROM module into your HP-75 Portable Computer to organize lists, to file your data, to evaluate alternative courses of action, and to get your answers instantaneously.

Applications

Types of applications for the HP-75 VisiCalc include:

Finance. Analyze stock and bond portfolios; organize rental property records.

Business. Calculate break-even points and income; analyze cash flow, planned expenses, and professional service fees; compute depreciation; keep travel expense and billing records.

Sales. Calculate sales vs. overhead and retail mark-up; forecast sales; keep an account register and travel expense record.

Statistics. Analyze tabular data gathered in the field.

Science/Engineering. Perform experimental data reduction and engineering design/analysis.**

HP-75 VisiCalc is a complete software solution with unique file and program capabilities.

- With VisiCalc software plugged into an HP-75 you can store multiple worksheets in memory at the same time. One worksheet may call data from another worksheet and use this data in calculations.
- VisiCalc formulas may call up BASIC programs. With this tool, you can create your own extension functions for specialized computation.

Features	Benefits
• User-defined column and row headers	Identify cell entry easily
• Multiple worksheets in memory	Access worksheets quickly and easily
• Formulas access other worksheets in memory	Simplify and structure a large task by spreading it over several manageable worksheets
• Access to BASIC programs from worksheets	Define your own functions
• Variable column width	Control report formatting
• Full-line editing of cell	Save time when changing long data entries or formulas
• Alternate viewing window	Perform "what if" analysis anywhere
• Expandable with HP-IL peripherals	Create a desktop system to print results, store worksheets, or view progress on a video display

- Using BASIC programs, you can redefine how HP-75 VisiCalc works. You can add new command capabilities such as sorting, searching, input screening, and much, much more.
- HP-75 VisiCalc lets you identify rows and columns with easy-to-remember names instead of letter/number coordinates. And there's no need for full-screen viewing. For example, column C might be March and row 6 Taxes. On the HP-75's single-line display, which shows one cell at a time, you'd see cell C6 as [March˙Taxes]. Column and row names also can be used in formulas. For example, total year taxes may be defined as SUM[January˙Taxes]:[December˙Taxes]
- Getting "what if" results is fast and easy with the Alternate Viewing Window. Simply change a value in the primary worksheet window, then move to the alternate window with a single keystroke to review results.
- The "GO TO" command gives you direct access to any cell (intersection of each column and row) on the worksheet.
- You can review worksheet status (global and local formatting, current cell type, recalculations order and mode, etc.); view user-defined or default headers; view a cell's formula or results; and view full precision or integer/dollar display formats.

*Available Summer 1983.

VisiCalc® is a registered trademark of VisiCorp.

**HP-75 VisiCalc simplifies many technical applications because it can access the extensive HP-75 math capabilities including evaluation such as the Math ROM (see page 21).

Product Specifications

1 32K-byte ROM
3 Prerecorded magnetic cards
1 Keyboard overlay
Owner's manual
Programmer's reference manual
Quick reference guide

PERIPHERAL SUPPORT

HP 82912A HP-IL 9 Inch Video Monitor or
HP 82913A HP-IL 12-Inch Video Monitor
HP 82163 Video Interface
HP 82905B Impact Printer
HP 82161A Digital Cassette Drive

VISICALC COMMANDS

D—Delete
F—Format
G—Global
H—Header
I—Insert
M—Move
P—Print
R—Replicate
V—Video
W—Width

Repeating labels

All of the HP-75's numeric functions may be used in cell formulas, except LEN, NUM, POS, and VAL. In addition, the following VisiCalc functions are provided:

AVERAGE(list)—Computes arithmetic mean or average of numeric parameters in the list
ERROR—Results in an "Error" value that makes all expressions using the value display ERROR in the cell display
MAXL(list)—Computes the maximum value in the list
MEAN(list)—Computes arithmetic mean of values in the list.
MINL(list)—Computes the minimum value in the list
NA—Results in a "Not Available" value that makes all expressions using the value display NA
SUM(list)—Computes the sum of the values in the list

Text Formatter
00075-15019

With portable Text Formatter software and an HP-75, you have word processing power at your fingertips anytime, anyplace. Simply plug the 8K-byte Application Pac module into the computer to create memos, letters, reports, and other short documents quickly and easily.

Applications

Applications for Text Formatter include:

On the plane. Prepare rough drafts and finished reports.

At the hotel. Review and edit notes for next-day presentations; write travel reports.

At the client's office. Prepare last-minute documents while waiting; take notes in conference.

At your office. Write memos and business reports.

At home. Catch up on correspondence.

Text Formatter is the perfect complement to the HP-75's built-in text editing capability. The text editor lets you input and modify text (weed out typos; search for words, insert or delete characters, words, or blocks of text). Text Formatter lets you control the appearance of the text (define paragraphs, set headings, number pages, and justify text).

You can store up to ten pages of text in the HP-75 with an HP 82700A 8K-Byte Memory Module.

Text Formatter's command set is easy to learn, use, and remember. Five commands define the document's structure:

- set margins.
- set number of lines per page.
- set line spacing.
- turn page numbering on and off.
- set justification.

Additional commands let you

- define new paragraphs.
- advance to the next page.
- skip lines.
- set tabs.

Commands consist of two-character abbreviations preceded by a caret (^) that you can set once at the start of the document or change at any time throughout the text. You enter the commands as you create the text file.

There are four ways to process your text.

- Center Mode centers text between specified margins.
- Copy Mode lets you output text exactly as it was entered, including all spaces. Each line begins printing at the left margin.
- Fill Mode lets you enter text without worrying about margins or spacing between words. Extraneous spaces are removed and words are printed up to the right margin. If a word is too long to fit on the current line, it will begin on the next line or page.
- Justify works similarly to fill mode, except that each line is justified for both left and right margins. If a word is too long to fit on the current line, additional spaces are added between words on that line so that text is aligned with left and right margins.

You also get these convenient features.

- Distribution List Command. Personalize your letters and save time with this command. It automatically creates an individual copy for each person on your list.
- Merge File Command. Insert those often-used paragraphs and letterheads whenever you need them.
- Slide Command. Create quality, professional transparencies for presentations and reports with the HP 7470A Graphics Plotter.
- Help Facility. Press a single key to list all commands and their functions.

Features	Benefits
• Simple command set	Learn and remember commands easily
• Compact, portable size	Take it anywhere
• Filing system	Keep convenient record of current documents
• Review and correct input	Never have to retype
• Distribution list command	Keep up-to-date lists. Create copy automatically. Personalize documents
• Merge file command	Add standard paragraphs wherever you need them
• Help file	Quick, convenient command set reference
• Page testing	Specify conditional page advance if it looks like too much copy
• Custom overlay	Learn, remember, and enter user-defined commands quickly and easily

- Custom Overlay. Makes user-defined keys easy to learn, remember, and enter.

Product Specifications

1 8K-byte ROM
2 Prerecorded magnetic cards
1 Keyboard overlay
Owner's manual
Quick reference guide

PERIPHERAL SUPPORT
HP 82905B Impact Printer
HP 7470A Graphics Plotter
HP 82161A Digital Cassette Drive

CAPACITY
Approximately six pages with the HP-75 Portable Computer
Approximately 10 pages with an additional HP 82730A 8K-Byte Memory Module

COMMAND SUMMARY
AD—Advance page
CE—Center mode
CO—Copy mode
DL—Distribution list
FI—Fill mode
JU—Justify mode
MA—Margins
ME—Merge
PA—Paragraph
PL—Page length
PN—Automatic page numbering
SK—Skip lines
SL—Slide
SP—Spacing
TA—Tab

Math Pac
00075-15015

The Math Pac is a powerful analytical tool for solving a wide range of mathematical problems. Its function set consists of a group of easy-to-learn BASIC commands that range from simple numeric and string functions to a sophisticated polynomial root-finder. With the 16K-byte module plugged into the HP-75, these commands are instantly available for your programs or for direct execution in the computer's calculator mode.

Applications

The Math Pac's comprehensive function set is useful for engineers, scientists, and mathematicians in many applications.

Radio Engineers. Use hyperbolic trigonometry to solve transmission line problems.

Mechanical and Structural Engineers. Use the definite integrals function to solve stress distribution problems.

Math Pac's function set includes:

- Real scalar functions.
  —Logarithms, round, truncate, factorial, and Gamma functions.
  —Hyperbolic and inverse hyperbolic sine, cosine, and tangent.
- Base conversions.
  —Binary/hexadecimal/octal to decimal conversion.
  —Decimal to binary/hexadecimal/octal conversion.
- Convenient input and output of arrays.
- Explicit and implicit array redimensioning.
- Extensive real and complex matrix operations.
  —Inversion, system solution, determinant, transpose, and array arithmetic.
  —Can handle arrays of arbitrary size.
- Complete set of complex functions.
- Sophisticated polynomial root-finder.
  —Locates all roots (real and complex) of a polynomial with real coefficients.
  —Can solve up to degree 560 (with the 8K memory expansion module). 16K can solve up to degree 360.
- Solution to $f(x) = 0$.
  —Solves a user-defined function for a real root.
- Definite integrals.
  —Evaluates definite integrals of user-defined functions.
  —Can compute improper integrals.
- Finite Fourier Transform.
  —Computes the complex to complex finite Fourier Transform.
  —Sophisticated algorithm achieves high speed.
  —May be used to compute inverse transform.
  —May be used to compute Fourier sine/cosine series coefficients.

Features	Benefits
• Broad, diverse function set	Solve most kinds of math problems, simple and complex
• Powerful, sophisticated algorithms	Solve problems quickly and efficiently
• BASIC command set	Program with ease and versatility
• All functions and operations written in the HP-75's assembly language	Enjoy precision, accuracy, and speed
• Takes advantage of HP-75's built-in math capabilities	Lets you select integer or decimal precision or full-floating decimal to display results

Product Specifications

1 16K-byte ROM
Owner's Manual
Quick Reference Guide

FUNCTION SET OVERVIEW

- Complete set of numeric and base-conversion functions
- Explicit and implicit array redimensioning
- Extensive real and complex matrix operations
- Convenient input and output of arrays
- Complete set of complex functions
- Sophisticated polynomial root finder
- Solution to $f(x) = 0$
- Definite integrals
- Fast Fourier Transform

STATEMENTS AND FUNCTIONS

ABSUM – Sum of absolute values of elements in array

ACOSH—Inverse hyperbolic cosine

AMAX – Value of largest element in array

AMIN – Value of smallest element in array

ASINH – Inverse hyperbolic sine

ATANH –Inverse hyperbolic tangent

BSTR$—Decimal to Binary/Hexadecimal/Octal conversion

BVAL – Binary/Hexadecimal/Octal to decimal conversion

CNORM – Largest sum of absolute values of elements in each column of array (column norm)

COSH—Hyperbolic cosine

DET –Determinant of matrix

DETL – Determinate of last matrix inverted in MAT INV statement or specified as first argument in MAT SYS statement

DOT—Sum of products of corresponding elements of vectors (dot product or scalar product)

FACT –Factorial/Gamma function

FNORM – Square root of sum of squares of elements in array (Frobenius norm or Euclidean norm)

FNROOT—Finds root of user-defined function

INTEGRAL – Evaluates definite integrals of user-defined functions

LBND – Lower bound of array subscripts

LOG(A—Base e) log of X

LOG2—Base 2 log of X

MAT—Assigns value of numeric expression or values of all elements of operand array to elements of result array

MAT(, ,) = (, ,) – Performs specified arithmetic operations between two arrays

MAT (= scalar) –Multiplies an array by a scalar

MAT CACOS – Complex inverse cosine

MAT CACOSH – Complex inverse hyperbolic cosine

MAT CADD – Complex number addition

MAT CASIN—Complex inverse sine

MAT CASINH – Complex inverse hyperbolic sine

MAT CATANH—Complex inverse hyperbolic tangent

MAT CATN –Complex inverse tangent

MAT CCOS – Complex cosine

MAT CCOSH –Complex hyperbolic cosine

MAT CDET—Determinate of a complex matrix

MAT CDIV—Complex number division

MAT CEXP –Complex exponential

MAT CIDN – Complex identity matrix

MAT CINV—Inverse of a complex matrix

MAT CLOG—Complex logarithm

MAT CMMULT—Multiplication of complex arrays

MAT CMULT—Complex number multiplication

MAT CON—Assigns value 1 to all elements of array

MAT CONJ—Conjugate of a complex number

MAT CPOWER—Complex involution

MAT CPTOR– Polar to rectangular conversion

MAT CRECP –Reciprocal of a complex number

MAT CROOT—All N complex Nth roots of a complex number (result implicitly redimensioned to N x 2)

MAT CROSS – Finds cross product (vector product) of two 3-element vectors

MAT CRTOP—Rectangular to polar conversion

MAT CSIN—Complex sine

MAT CSINH – Complex hyperbolic sine

MAT CSQR – Complex square root

MAT CSUB – Complex number subtraction

MAT CSUM—Adds values of elements in each column of array

MAT CSYS – Solution of a system of complex linear equations

MAT CTAN – Complex tangent

MAT CTANH – Complex hyperbolic tangent

MAT CTRN—Conjugate transpose

MAT DISP—Displays elements of arrays

MAT DISP USING – Displays elements of arrays according to format string specified in this statement or in IMAGE statement whose statement number is specified

MAT FFT—Complex to complex Fast Fourier Transform

MAT IDN – Assigns value 1 to all diagonal elements of matrix, and value 0 to all others

MAT INPUT—Assigns values input from keyboard to elements of arrays

MAT INV – Finds inverse of matrix

MAT LUFACT – Performs LU factorization of a matrix

MAT PRINT – Prints elements of arrays.

MAT PRINT USING—Prints elements of arrays according to format string specified in this statement or in IMAGE statement whose statement number is specified

MAT PROOT – Finds all roots (real & complex) of a polynomial with real coefficients

MAT READ—Assigns values listed in DATA statements to elements of arrays

MAT RSUM – Adds values of elements in each row of array

MAT SYS – Solves matrix equation $A_n \times B_{nr}$ for unknown B array X, given any square matrix A and any other array B

MAT TRN—Finds transpose of array

MAT ZER – Assigns value 0 to all elements of array

MAXAB – Largest absolute value of any element in array

MINAB – Smallest absolute value of any element in an array

REDIM – Changes working size of arrays to size specified.

RNRRM – Largest sum of absolute values of elements in each row of array

ROUND—Round X at Nth digit

SINH – Hyperbolic sine

SUM – Sum of elements in array

TANH – Hyperbolic tangent

TRUNCATE – Truncate X at Nth digit

UBND—Upper bound of array subscript

Surveying Pac*
00075-15012

This handy Application Pac software gives you one integrated program that simply and easily handles your routine surveying calculations. Plugged into the HP-75 Portable Computer, it permits convenient data entry in the field followed by quick, easy calculation in the field or back at the office.

Applications

The Surveying Pac is a portable solution that lets land surveyors and engineers handle calculations involved in:

- Traversing
- Inversing
- Coordinate geometry
- Curve layout
- Radial staking

The Surveying Pac has a unique system that lets you enter data in a variety of ways: by using bearings, north and south azimuths, angles left or right, and horizontal deflections left or right. You can choose any of these input modes independently of the output mode desired.

Its friendly, menu-driven system eliminates the need to memorize cumbersome commands or to use keyboard overlays. Descriptive prompts guide you through each function. And if a mistake is made, the system displays an error message and allows reentry of the data.

You'll also appreciate these features:

- The HP-75 is a BASIC language machine, so subprograms can be easily modified for custom applications.
- The HP-75 can maintain an X-Y-Z (northing, easting, elevation) data file. All coordinates are stored immediately and can be recalled at any time. Points also may be transferred to Series 80 Personal Computers via HP-IL (Hewlett-Packard Interface Loop).
- Output is tailored to your specifications. You choose the units, number of decimal places to print, bearings vs. full-circle azimuths, etc.

Features	Benefits
• Provides one integrated program rather than a collection of individual routines	Solve a wide range of surveying problems
• Anticipates desired results and prompts for missing inputs	Get answers quickly, easily
• Flexible data entry system	You don't have to change field procedure to use the system
• Surveying routines can access a stored data file or prompt you to create a new file	Enter data in the field and calculate results. Or store data for analysis back at the office
• Can transfer from one routine to another, including user-written programs	Tailor the system to your needs with your own programs
• Menus for prompting	No fussing with owner documentation in the field
• Checks inputs for validity. Beeps and displays warning for invalid data	Save time. Automatic error checking occurs as data is entered and prevents lengthening or editing of files
• HP-75 built-in card reader	Enjoy convenient, portable, inexpensive mass-storage medium
• HP-IL peripherals available	Print or store results in the field with HP-IL portable peripherals.

*Available Summer 1983

Product Specifications

16K-byte ROM
Owner's Manual

PERIPHERAL SUPPORT
HP 82905B Impact Printer
HP 82162A Thermal Printer/Plotter
HP 82161A Digital Cassette Drive
HP 82163 Video Interface
HP 82912A 9-Inch Video Monitor or
HP 82913A 12-Inch Video Monitor

CAPACITY
Approximately 660 data points can be stored with the HP-75 Portable Computer
Approximately 1000 data points can be stored with the additional HP 82700A 8K-byte Memory Module.

COMMAND SUMMARY

Point Manipulation

Enter & Assign	Rotate
List	Translate
Clear	Scale
Duplicate	

Field Control
Enter & Reduce Field Notes
Slope Reduction
Side Shots
Computer Error of Closure
Angle Balance
Bowditch or Compass Rule Balance
Crandall's Rule Balance
Radial Stake Out

Coordinate Geometry
Traverse
Inverse
Bearing-Bearing Intersection
Bearing-Distance Intersection
Distance-Bearing Intersection
Distance-Distance Intersection
Inscribed Curve with Straight Tangents
Inscribed Curve with Curved Tangents
Inscribed Curve with Straight & Curved Tangents
Curve Inverse
Solve for a Curve Given Arc Length
Solve for a Curve Given Chord Length
Solve for a Curve Given Central Angle
Solve for a Curve Given Tangent Length
Compute Area (including curved sides)

Data Communications Pac* 00075-15035

With the Data Communications Pac, an HP-75 and a modem, you have easy access to other computer systems or to commercial time-sharing systems such as THE SOURCE℠, Dow Jones News/Retrieval Service®, and CompuServe.

You can obtain stock quotes, send or receive mail electronically, and access complete libraries of information anywhere, anytime.

Applications

Applications for Data Communication include:

Finance. At your office, retrieve up-to-the-minute stock and bond quotes for immediate analysis and action.

Business. At your hotel, send a memo or receive letters from your electronic mailbox; even make airline reservations.

Sales. At your client's office, transfer documents and other information to and from your main office's host computer.

Science. In the field, send gathered data to your lab computer for processing.

Data Communications is a versatile package providing terminal emulation capability for the HP-75C. Set-up files allow the HP-75 and a modem to be configured for communication with a variety of host computers.

Features	Benefits
• Connect to information systems such as THE SOURCE℠, Dow Jones News/Retrieval Service® or CompuServe	Access the latest information anywhere, anytime
• Transfer text files	Send previously written text files or receive information into text files.
• Use with an HP 82168A Acoustic Coupler, any RS-232C compatible modem, or direct connect to host system	Configure a system that meets your application needs.
• Multiple display devices	View information on the HP-75's display, printer, or video monitor
• Menu driven command set	Access commands with a single keystroke
• Set-up files	Flexible system configuration
• Special code words	Define commonly used log on procedures, recall by code word later in the program
• Set-up file editor	Add, change, delete or list code words in set-up files
• 500-character buffer	Review information received when using the HP-75's display

Special code words are used to provide flexible system configuration and to allow common log-on procedures to be stored and recalled from the program.

An editor is available to add, delete, change, or list code words in set-up files.

Other features include:

- Incoming and outgoing data may be sent to the HP-75's liquid-crystal display, a printer, and/or a video interface.
- Stores incoming information in a 500-character buffer for later review.
- Text files written offline can be transferred to a host computer.
- Incoming information may be saved in the HP-75's text file for later viewing, editing, or printing.
- Use the HP 82168A Acoustic Coupler (modem) or any RS-232C compatible modem. Or connect directly to a host computer.

THE SOURCE℠ is a service mark of Source Telecomputing Corp., a subsidiary of Reader's Digest Association.

Dow Jones News/Retrieval Service® is a registered trademark of Dow Jones & Company, Inc.

*Available Summer 1983

Product Specifications

1 16K-byte ROM
3 Prerecorded magnetic cards
Owner's Manual
Quick Reference Guide

PERIPHERAL SUPPORT

HP 82168A Acoustic Coupler
HP 82164A HP-IL/RS-232C Interface
HP 82905B Impact Printer
HP 82162A Thermal Printer/Plotter
HP 82163 Video Interface
HP 82912A 9-Inch Video Monitor or
HP 82913A 12-Inch Video Monitor

CAPACITY

Approximately one page of information is stored in a buffer when using the LCD as the display device for the HP-75 Portable Computer.
Approximately six pages of text can be transferred between the HP-75 and a host computer system.
Additional four pages of text can be transferred using the HP 82700A 8K-byte Memory Module.

COMMAND SUMMARY

?—Help.
C—Change set-up file.
D—Dial.
E—Set-up file editor.
H—Hang up the phone.
L—Toggle LCD ON/OFF.
P—Toggle printer ON/OFF.
Q—Leave DataComm program.
S—Send special code word.
T—Terminal mode.
V—Toggle video ON/OFF.
X—Transfer text file.

Editor commands

A—Add code word.
C—Change code word.
D—Delete code word.
L—List set-up file.
Q—Leave editor.
?—Help.

LCD control modes

[I/R]—Toggle between scroll and line display mode.
[FET]—Toggle between terminal and buffer mode.

Hewlett-Packard
HP-75 Solutions Books

Easy-to-use Series 70 Solutions Books come complete with preprogrammed magnetic cards and documentation. These ready-written programs are also available on cassettes from the Users' Library (see page 29).

Math I (00075-13003)
- Fast Fourier Transform
- Fast Fourier Series/Trigonometric Interpolation
- Attenuated Fourier Series
- Spherical Harmonics
- Elliptic Integrals
- Bessel Functions: Asymptotic Expansion
- Bessel Functions: Backward Recurrence
- Gamma Functions
- Error Function
- Legendre Polynomials

Math II (00075-13004)
- Simultaneous Linear Equations
- Quadratic Equations
- Parabolic Equations
- Roots of Polynomials
- Triangle Solutions
- Polygon Area
- Hyperbolic Functions
- Complex Trigonometric Functions
- Prime Factorization

Math III (00075-13005)
- Midpoint Rule for Integration
- Trapezoidal Rule for Integration
- Romberg Rule for Integration
- Simpson's Rule for Integration
- Newton-Cotes Rule for Integration
- Euler's Method
- Newton's Method
- Trapezoidal Rule for Ordinary Differential Equations
- Runge-Kutta
- Contraction Mapping

Finance (00075-13009)
- Breakeven Analysis
- Growth
- Notes
- Bond Price and Yield
- Depreciation Calculator
- Lease vs. Purchase
- Present Value of a Geometric Series
- Present Value of an Arithmetic Gradient Series

Games I (00075-13006)
- Adventure
- Blackjack
- Rocket Lander
- Echo
- Word Scramble

Games II (00075-13007)
- Football
- Hamurabi
- Slot Machine
- Golf
- Reverse
- Breakout

Real Estate (00075-13010)
- Income Property Analysis
- Estimate of Buyer's Cost
- Seller's Costs and Net Equity
- Internal Rate of Return
- Rent vs. Buy
- Variable Payment Mortgage
- Amortization Tables
- Variable Interest Rate Mortgage
- Loan Schedule

I/O Utilities (00075-13013)*
- HP-IL Commands

Electronics (00075-13008)
- Common Components for 555 & 567 ICs
- Ohm's Law with dBm Conversion
- Smith Chart Conversion
- Mismatch
- dB to % to dB Conversion
- Butterworth Filter Design
- Active Filter Design
- Low Pass Filter Design
- Coil Design

Test Statistics (00075-13012)
- One-Sample Test Statistic for the Mean
- Kendall's Coefficient of Concordance
- Correlation Coefficient Test
- Intraclass Correlation Coefficient
- Kurskal-Wallis Statistic
- Mann-Whitney U-test
- Fisher's Exact Probability
- Two-Factor Analysis of Variance
- Bartlett's Chi-Square Statistic
- Difference Among Proportions
- Data Transformations

Graphics (00075-13016)
- Line Plot
- Bar Chart Plot
- Pie Chart Plot

Mass Media Duplication/Privacy (00075-13015)

Statistics (00075-13011)
- Basic One Variable Statistics
- Coefficient of Correlation
- Probability of Normal, F, t, & Chi-Square Distributions
- Dependent (Paired) t-Test
- t-Test for 2 Unequal Sized Samples
- Chi-Square Test
- One-Way Analysis of Variance
- Simple Linear Regression
- Permutations & Combinations

*Requires an understanding of Forth level HP-IL protocol.

Hewlett-Packard Software Development Tools

By itself, the HP-75 has a built-in BASIC interpreter and a comprehensive set of editing functions that smooth and speed the development of BASIC language software. The HP 82713A Plug-In Module Simulator (PMS) is added to develop and field test BASIC language custom software and to reproduce it in plug-in modules. The 16K-byte medium consists of a device that simulates a plug-in ROM module, as well as a set of Series 70 BASIC commands on magnetic cards. BASIC language programs written on the HP-75 can be loaded into the PMS and run as if they were plug-in modules. When you're satisfied the custom program is viable, HP will reproduce it in as many custom modules as needed.

PMS has a built-in lithium battery that lets it retain its contents when unplugged.

Series 70 Custom Products

To solve your routine programming and data handling problems, you'll want to consider Series 70 Custom Product applications. Keys on the HP-75 are user-definable. Custom Keyboard Overlays make data entry quicker and easier. Up to three custom software modules can be plugged easily into the HP-75, providing as much as 96K bytes of custom ROM software. You can choose from a variety of inexpensive media for your special applications. For more information, contact your HP sales representative.

Users' Library Software

More than 100 programs in math, business, statistics, and engineering are included in the Users' Library "Catalog of Contributed Programs" for Series 70. And the Users' Library welcomes more. The catalog contains information on how to buy and submit programs and on how to become a Library member. Program documentation includes individual program listings, and it's available with or without magnetic cards. You also can purchase programs on minicassettes for the HP-IL Digital Cassette Drive.

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Printed in U.S.A. 5/83
5953-5549